

REMARKS

The Office Action of April 24, 2006 has been carefully studied. As a prefatory matter, it is noted that in the Office Action summary that claim 1 is objected to inasmuch as box 7 contains an X. Applicants cannot discern any objection to this claim in the body of the Office Action, however. The following paragraphs correspond to the order of the paragraphs of the Office Action:

Specification

The abstract of the disclosure is now rewritten so that it is in proper language. Also, the abstract of the disclosure points out that the function of the "converting pretreatment stage" is to effect hydrocracking and hydroisomerization reactions, as pointed out on page 42 of the specification. Claim 1 is amended in a similar manner. Also, the claims are amended so as to employ conventional patent claim terminology, the meaning and scope of the claims being the same.

Claim Rejections - 35 U.S.C. 103

All the claims are rejected over Benazzi et al. (WO 01/81508 A1) in view of Baker et al. (U.S. 5,951,848) and further in view of Akizuki et al. (U.S. 4,837,193).

Applicants have carefully studied these references and are of the respectful opinion that they fall far short of suggesting the present invention. In support of this contention, the following discussion of Applicants' invention and the references is respectfully submitted:

Benazzi et al. WO 01/81508 A1

This reference provides a hydrocracking step preferably on a Y or beta zeolite, as seen from the abstract. ~~On~~ Furthermore, on page 2 last line and lines 1 and 2 on page 3, in general the hydrocracking is conducted on a catalyst containing at least one zeolite and which also contains at least one element from group VIII and at least one from group VIB. In comparison, in Applicants comparable step which is the "converting pretreatment stage" which effects "hydrocracking and hydroisomerization reactions", the catalyst must be one that contains at least

one noble metal of group VIII deposited on a non-zeolitic silica-alumina-based substrate that has a silica content by mass of from 10% to 80% by weight. So as to make it clear that step (a) of Applicants' claim is not the same as a hydrotreatment, the optional step of hydrotreatment which is conducted before step (a) is now inserted in claim 1, and it is positively recited in claim 9. The importance of Applicants' non-zeolitic silica-alumina-substrate is emphasized in the present application by the extensive discussion of same on pages 25 through 42 of the application. In the absence of Applicants' disclosure, there would be no motivation or suggestion to arbitrarily change the zeolitic hydrocracking catalyst in WO 01/81508 to that of step (a) in the present invention. Aside from this fatal flaw, it is to be noted that Applicants' silica alumina substrate has a particular porosity distribution which is nowise suggested by the reference. In any case, since the primary reference Benazzi et al. has a fatal flaw which is not cured by the secondary references, the teachings of the secondary references regarding the hydrodewaxing step are moot, but for the sake of good order, they are discussed as follows:

Baker et al. (U.S. 5,951,848)

Baker et al. discloses a process for catalytically dewaxing a feedstock whereby the aging of the dewaxing catalyst is minimized. Suitable feedstock are preferentially hydrocrackates or hydrotreated raffinates but also include raffinate products of conventional solvent extraction processes and preferably dewaxing feeds with moderate levels of nitrogen and sulfur (see column 3, lines 37-40 and abstract).

The feed can undergo a hydrocracking pretreatment step to promote the saturation and ring opening of the low quality aromatic components in the feed to produce hydrocracked products which are more paraffinic (see column 4, lines 60-64).

In order to avoid the aging of the catalyst, the feed is then treated by a catalyst system comprising two catalysts acting in synergistic combination, a hydrotreating catalyst and a dewaxing catalyst, the dewaxing catalyst being downstream of the hydrotreating catalyst.

Therefore, the critical feature of Baker et al. is the use of a catalyst system comprising two catalysts acting in synergistic combination in single reactor vessel wherein the effluent from the first hydrotreating catalyst passes directly over the dewaxing catalyst without any pressure

reduction or light products separation steps (see column 9, lines 8-10).

Referring now to the Office Action, it is respectfully submitted that it contains an incorrect statement that: "hydrotreating" referred by Baker et al. invention is equivalent to the "pretreatment" of the Applicant. As stated above, the present invention uses a converting pretreatment of the feedstock step (a) wherein the molecules of the feedstock undergo hydroisomerization and hydrocracking reactions to result in the formation of products such as gas oils, kerosene and a residue whose properties (viscosity index) have been improved. Note that stage (a) has the advantage of increasing the viscosity index (VI) of the hydrocracking residue, i.e. an increase of VI of at least 5 points, and very often more than 5 points, and even more than 10 points, is generally obtained (page 43 of the application).

On the contrary, in Baker et al. invention, the hydrotreating catalyst provides no VI boost to the finished lube since the Base oil VI is nearly identical for the case where the dewaxing catalyst operates alone or in tandem with the hydrotreating catalyst (see column 9, lines 4-7).

Therefore, these two steps of hydrotreating and dewaxing in Baker et al. deal with different reactions and do not provide the same technical result. Accordingly, the terms "hydrotreating in the Baker et al. invention and "converting pretreatment" in the present invention cannot be considered as equivalent.

Therefore, even if the Baker invention discloses in step (b) a dewaxing catalyst based on a constrained intermediate pore crystalline material, such as a zeolite or a silica aluminophosphate, a refinery engineer of ordinary skill would not be motivated to alter the very specific catalytic system using two catalysts acting in synergy. Much less would a petroleum engineer of ordinary skill be motivated to destroy the synergistic effect of Baker et al. by modifying the hydrotreating step (a) of the Baker et al. process so as to replace it with Applicants' converting pretreatment step (a) with the surprising effect of improving the viscosity index (VI).

Akizuki et al. (U.S. 4,837,193)

The Akizuki et al. patent is directed to a hydrotreating catalyst which may be useful for a wide variety of reactions as set forth on column 1 lines 20-33, but from a process aspect the patent is specifically directed to hydrodesulfurizing heavy hydrocarbon oils. In particular, the

Akizuki et al. catalyst has a distribution of pores in the region of both micropores and macropores which provides an extremely marked desulfurization effect (column 4, lines 44-51). As such, there would be no motivation for a refinery engineer to substitute this catalyst for any of the catalysts of Benazzi et al. or Baker et al. since the aforesaid references are not applied to a desulfurization process, much less would the reference lead a refinery engineer to modify Benazzi et al. or Baker et al. so as to arrive at Applicants' invention which results in the production of high quality base oils and middle distillates.

It is appreciated that the Examiner has made a thorough analysis of the specifics of catalyst compositions in order to attempt to arrive at Applicants' invention, but the fact remains that Applicants pretreatment conversion reaction is one which results in hydrocracking and hydroisomerization, not the hydrotreating steps of Benazzi et al. and Baker et al., and the teachings of Akizuki et al. are so discursive with respect to the number of different types of processes that can be used on the one hand and the emphasis on desulfurization on the other hand, a combination of the references would not even be helpful to a refinery engineer of ordinary skill even with using hindsight in this complex and crowded art of refinery processes.

As for the pore distribution of the Akizuki et al. catalyst, Applicants do not necessarily acquiesce to the statements in the Office Action and reserve the right to rebut same if ever necessary. The same non-acquiescence relates to all statements in the Office Action.

As for Applicants' dependent claims, they provide another layer of unobviousness, for example claims 15 and 16. However, Applicants will not burden the record with a discussion of such claims, but reserve the right to do so at a later date, if ever necessary.

In view of the above remarks and in the absence of a more pertinent reference, it appears that the application is in condition for allowance. However, if there are any remaining issues which can be expeditiously resolved by a telephone conference, the Examiner is courteously invited to telephone Counsel at the number indicated below. Inasmuch as Counsel will not be readily available from July 30, 2006 through September 7, 2006 and also the latter part of September and the beginning of October, please call Mrs. Richardson, Counsel's Assistant, at 703-812-5326 and she will involve another attorney.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



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